



**AGENDA**  
**Placer County**  
**Local Hazard Mitigation Plan (LHMP) Update**  
**HMPC Meeting #2 - Risk Assessment**  
**February 3, 2021**

1. Introductions
2. Status of the DMA Planning Process
3. Review of Risk Assessment (PowerPoint)
4. Open Discussion and Input on the Risk Assessment (Handout)
5. Review of Data Needs
6. Next Steps

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## Hazard Identification & Profiles: Placer County

Hazard	Geographic Extent	Likelihood of Future Occurrences	Magnitude/Severity	Significance	Climate Change Influence
Agricultural Hazards	Significant	Highly Likely	Critical	Medium	Medium
Avalanche	Limited	Likely	Limited	Low	Medium
Climate Change	Extensive	Likely	Limited	Medium	–
Dam Failure	Significant	Occasional	Critical	High	Medium
Drought & Water Shortage	Extensive	Likely	Critical	High	High
Earthquake	Significant	Occasional	Critical	Medium	Low
Floods: 1%/0.2% annual chance	Limited	Occasional	Critical	High	Medium
Floods: Localized Stormwater	Limited	Occasional/Highly Likely	Limited	Medium	Medium
Landslides, Mudslides, and Debris Flows	Limited	Occasional	Limited	Low	Medium
Levee Failure	Limited	Unlikely	Limited	Low	Medium
Pandemic	Extensive	Likely	Catastrophic	Medium	Medium
Seiche	Limited	Unlikely	Limited	High	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium	High
Severe Weather: Freeze and Snow	Extensive	Highly Likely	Critical	Medium	Medium
Severe Weather: Heavy Rains and Storms	Extensive	Occasional	Limited	Medium	Medium
Severe Weather: High Winds and Tornadoes	Extensive	Highly Likely	Critical	High	Low
Tree Mortality	Extensive	Likely	Limited	High	High
Wildfire	Extensive	Highly Likely	Critical	High	High
<div> <div> <b>Geographic Extent</b>  Limited: Less than 10% of planning area  Significant: 10-50% of planning area  Extensive: 50-100% of planning area </div> <div> <b>Likelihood of Future Occurrences</b>  Highly Likely: Near 100% chance of occurrence in next year, or happens every year.  Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.  Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.  Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years. </div> <div> <b>Magnitude/Severity</b>  Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths  Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability  Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability  Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid  <b>Significance</b>  Low: minimal potential impact  Medium: moderate potential impact  High: widespread potential impact  <b>Climate Change Influence</b>  Low: minimal potential impact  Medium: moderate potential impact  High: widespread potential impact </div> </div>					

## Risk Assessment Methodology

### *Calculating Likelihood of Future Occurrence*

The frequency of past events is used in this section to gauge the likelihood of future occurrences. Based on historical data, the likelihood of future occurrence is categorized into one of the following classifications:

- **Highly Likely:** Near 100% chance of occurrence in next year, or happens every year.
- **Likely:** Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less.
- **Occasional:** Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
- **Unlikely:** Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

### *Calculating Vulnerability*

Vulnerability is measured in general, qualitative terms, and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential:

- **Extremely Low:** The occurrence and potential cost of damage to life and property is very minimal to non-existent.
- **Low:** Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium:** Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High:** Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have already occurred in the past.
- **Extremely High:** Very widespread and catastrophic impact.

### *Defining Significance (Priority) of a Hazard*

Defining the significance or priority of a hazard to a community is based on a subjective analysis of several factors. This analysis is used to focus and prioritize hazards and associated mitigation measures for the plan. These factors include the following:

- **Past Occurrences:** Frequency, extent, and magnitude of historic hazard events.
- **Likelihood of Future Occurrences:** Based on past hazard events.
- **Ability to Reduce Losses through Implementation of Mitigation Measures:** This looks at both the ability to mitigate the risk of future occurrences as well as the ability to mitigate the vulnerability of a community to a given hazard event.

## Risk Assessment Summary: Placer County Planning Area

### *Agricultural Hazards*

- Most agricultural disasters in Placer County are associated with severe weather events, including heavy rains, floods, heat, and drought; insects and noxious weeds are also a concern.
- All but one USDA declarations (24 total) from 2002-2020 were associated with severe weather events; one associated with fire. Since 2012, 20 out of 23 USDA declarations were associated with drought.
- **WHAT ARE THE BIGGEST AG ISSUES RELATED TO NATURAL HAZARDS?**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Medium
- Priority Hazard

### *Avalanche*

- High and moderate avalanche zones are located near the Placer-Nevada County line, south of Donner Lake and Lake Van Norden, east of Tahoe City, near Twin Peaks and McKinney Bay, and in areas near Squaw Valley, Alpine Meadows, and Sugar Bowl.
- Since 2009, there have been 286 avalanche fatalities in the US. There were 20 avalanche fatalities in Placer County between 1982 and 2020. Of these, 2 fatalities occurred in two incidents since the 2016 LHMP.
- **ANY ADDITIONAL ISSUES/CONCERNS SINCE THE 2016 LHMP?**
- Likelihood of Future Occurrence: Likely
- Vulnerability: Low
- Non-Priority Hazard?

### *Climate Change*

- The 2018 State of California Multi-Hazard Mitigation Plan stated that climate change is already affecting California. Sea levels have risen by as much as seven inches along the California coast over the last century, increasing erosion and pressure on the state's infrastructure, water supplies, and natural resources. The State has also seen increased average temperatures, more extreme hot days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow, and both snowmelt and rainwater running off sooner in the year. Climate Change has the potential to alter the nature and frequency of most hazards.
- **THE PLACER COUNTY SUSTAINABILITY PLAN HAS LOTS OF GREAT CLIMATE CHANGE INFO. DOES ANYONE HAVE ANY CLIMATE CHANGE CONCERNS/ISSUES TO NOTE?**
- Likelihood of Future Occurrence: Likely
- Vulnerability: Medium
- Priority Hazard

### *Dam Failure*

- According to data provided by Placer County, CA DWR, and Cal OES, there are 47 dams in the County. Of these, there are 3 extremely high hazard dams, 11 high hazard dams, 9 significant hazard dams, and 12 low hazard dams in Placer County that falls under the jurisdiction of the DSOD (jurisdictional dams described above). 12 dams in Placer County lie outside the jurisdiction of the DSOD and do not have a hazard classification.

- In addition, there are 2 extremely high (Camp Far West/Rollins) and 4 High Hazard dams (Combie, Magnolia, Mark Edson, Lake Angela) located outside the County with inundation areas in unincorporated Placer.
- The most significant dams of concern include the Extremely High and High Hazard where loss of life is possible.
- Most inundation areas from extremely high and high dams intersect the unincorporated County; 3 dams (inside the County) also intersect Auburn – Lake Valley, LL Anderson, Sugar Pine.
- 4 Dam incidents affecting Placer County: 1964 Hell Hole Dam failure, 1986 Auburn Coffey Dam Failure. August 2004 Ralston Dam Release Gate Break, 2009 Cottonwood dam incident, Oroville Spillway Incidence 2018 (Butte County), **OTHERS?**
- **WHAT ARE THE COUNTY'S BIGGEST CONCERN FROM DAMS? MOST NOTABLE DAMS OF CONCERN?**
- Likelihood of Future Occurrence: Occasional
- Vulnerability: High to Extremely High?
- Priority Hazard

### *Drought and Water Shortage*

- Historical drought data for the Placer County Planning Area and region indicate there have been 5 significant droughts in the last 84 years.
- Since 2012, snowpack levels in California had dropped dramatically. 2015 estimates place snowpack at 5 percent of normal levels. However, snowpack levels increased in 2016 and in 2017 snowpack levels were the highest they've been in 22 years. But then back down again in early 2018, only to be back up again in late 2018/2019. 2019/2020 was experiencing a fair amount of rain early on, and now again as we go in to 2021.
- 1 state (2014) disaster declarations and 1 federal declaration (1977) for Placer County since 1950. 26 USDA disaster declarations for drought 2012 – 2020. There have been 44 NCDRC drought events in Placer County.
- **WHAT ARE THE BIGGEST ISSUES/IMPACTS AND CONCERNS IN THE COUNTY FROM DROUGHT AND WATER SHORTAGE?**
- Likelihood of Future Occurrence: Drought - Likely/Water supply - Occasional
- Vulnerability: High
- Priority Hazard

### *Earthquake*

- Placer County lies between two seismically active regions in the western United States. Tectonic stresses associated with the North American-Pacific Plate boundary can generate damaging earthquakes along faults 30 to 100 miles to the west of the County. Extreme eastern Placer County borders the Basin and Range province that entails most of Nevada and western Utah. This area is riddled with active faults that are responsible for and form the boundary between each basin or valley and the neighboring mountain range.
- The USGS National Seismic Hazard Maps provides acceleration and probabilities for various time periods. Placer County falls within an area of mostly low to moderate seismic risk.
- USGS identified 51, 5.0 or greater earthquakes have occurred within 90 miles of Western Placer, and 66, 5.0 or greater earthquakes have occurred within 90 miles of Eastern Placer.
- **ANY SPECIFIC PAST OR FELT OCCURRENCES FROM NEARBY EVENTS? PAST DAMAGES? WHAT ABOUT THE EARTHQUAKES ON THE EASTERN SIDE OF THE COUNTY?**

➤ **DO COMMUNITIES HAVE A URM OR OTHER INVENTORY OF VULNERABLE SEISMIC BUILDINGS?**

- Likelihood of Future Occurrence: Unlikely – large, damaging earthquake; Occasional – minor earthquake
- Vulnerability: High – Extremely High?
- Priority Hazard?

### *Flood Hazards*

#### **1%/0.5%/0.2% Annual Chance**

- Historically, portions of Placer County have always been at risk to flooding because of its annual percentage of rainfall in the winter and the number of watercourses that surround/traverse the County.
- 16 state and 13 federal declarations from 1950-present were for heavy rains and flooding. 39 NCDC Flood Events, and an additional 59 events related to severe rain and storms.
- **REVIEW RISK ASSESSMENT AND ADD INFORMATION ON MAJOR FLOOD EVENTS.**
- **NEED SUMMARY OF IMPACTS FROM THE 2017/2018 FLOOD EVENT (THAT RESULTED IN EOC ACTIVATION AND A DISASTER DECLARATION). NEED INFORMATION ON ANY OTHER EVENTS SINCE THE 2016 PLAN. HOW ABOUT 2019 AND LAST WEEK?**
- Likelihood of Future Occurrence: 1%-Occasional; 0.5% and 0.2%-Unlikely
- Vulnerability: High
- Priority Hazard

#### **Localized/Stormwater flooding**

- Significant localized flood history in the County – occurs annually
- **CAN THE EACH PARTICIPATING JURISDICTION PROVIDE UPDATED DETAILS ON PROBLEM AREAS? PAST OCCURRENCES?**
- **REVIEW RISK ASSESSMENT AND ADD INFORMATION ON SIGNIFICANT FLOOD EVENTS/ISSUES/AREAS.**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Medium
- Priority Hazard

### *Landslides, Mudslides, and Debris Flows*

- The NCDC contains no records of landslides in the County. There have been no disaster declarations associated with landslides in Placer County.
- Notable landslides of record include the landslides in the Tahoe area along the Truckee River, Squaw Creek, and Bear Creek rivers associated with the 1997 Flood event.
- Recent landslide areas of concern (from 2016 LHMP) include the following: Old Foresthill Road, Ophir Road (two sites) – (1) near Stonehouse Road and (2) near Wise Road, Yankee Jim/s Road. **OTHERS?**
- Other landslide incidents of varying degrees of magnitude tend to occur in places throughout the County several times in a given year, but in most cases do not cause significant damage or public safety risk.
- **ANY CURRENT LOCATIONS/PAST EVENTS TO NOTE?**
- Likelihood of Future Occurrence: Occasional
- Vulnerability: Low
- Non-Priority Hazard

## *Levee Failure*

- Several levees within Placer County and its incorporated communities (Roseville/Lincoln) have been determined to provide protection from the flood that has a 1-percent-chance of being equaled or exceeded in any given year.
- There are several existing levee systems at the downstream end of Auburn Ravine (mainly past the confluence with Orchard Creek) that are not certified by FEMA as providing protection against a 1% annual chance flood.
- No past occurrences of levee failure. **ANY PAST OCCURRENCES/ISSUES/CONCERNS?**
- Likelihood of Future Occurrence: Unlikely
- Vulnerability: Low
- Non-Priority Hazard

## *Pandemic*

- The 20<sup>th</sup> Century had 3 Pandemics (WHO): 1918-1919 Influenza Pandemic (H1N1), 1957-1958 Influenza Pandemic (H2N2), and the 1968 Influenza Pandemic (H3N2). The 21st Century had 2 Pandemics (WHO): 2009 Swine Flu (H1N1) and 2020 Covid-19.
- One 2020 state and federal declaration for Covid-19; the NCDC does not track pandemics.
- The Placer County EOC was activated for COVID-19 in March – April (Level 1), May (Level 2), and June (Level 3).
- As of early February 2021, there had been over 18,000 cases of Covid-19 in the County and around 200 deaths.
- **CAN WE GET A BRIEF SUMMARY OF PLACER COUNTY COVID-19 IMPACTS/ RESPONSE EFFORTS/PRIMARY ISSUES/CONCERNS? WHAT ABOUT THE 2009 SWINE FLU?**
- Likelihood of Future Occurrence: Likely
- Vulnerability: High
- Priority Hazard

## *Seiche*

- Research from the University of Nevada estimates that an earthquake must be at least a magnitude 6.5 to cause a damaging seiche at Lake Tahoe. The three faults directly underneath the lake are considered capable of generating magnitude 7.0 or larger earthquakes. Computer models of seiche activity at Lake Tahoe prepared by the University of Nevada research team estimate that waves as high as 30 feet could strike the shore. These projections suggest largest waves might hit Sugar Pine Point, Rubicon Point, and the casinos in South Lake Tahoe.
- There have been no occurrences of major seiche activity at Lake Tahoe in recent years. University of Nevada geologists have found deposits that extend for 10 miles along the McKinney Bay shore from Sunnyside through Tahoma. These deposits indicate a tsunami or seiche with 30-foot-high waves occurred approximately 7,000 years ago.
- **ANYTHING TO UPDATE FOR SEICHE?**
- Likelihood of Future Occurrence: Unlikely
- Vulnerability: High
- Non-Priority Hazard?



## Severe Weather

### Extreme Heat

- Annual occurrences of hot temperatures. The highest recorded daily extreme was 113°F in July 1972 in western Placer. In a typical year, maximum temperatures exceed 90°F on 67.7 days in western Placer.
- In eastern Placer, the highest recorded daily extreme was 94°F in July 1933. In a typical year, maximum temperatures exceed 90°F on 0.4 days in eastern Placer.
- No state or federal disaster declarations. 5 USDA declarations since 2012. 32 extreme heat events (NCDC) since 1950.
- Climate change likely to affect this hazard in the future.
- EOC activations include an Extreme Heat and Potential Rolling Blackout in August 2020; numerous PSPS events: 2018 (2), 2019 (7), 2020 (5).
- **IS THERE A SUMMARY OF PSPS EVENTS, AREAS AFFECTED, DURATION, ETC. TO NOTE?**
- **PLEASE PROVIDE DETAILS ON OTHER EXTREME HEAT EVENTS/MAJOR CONCERNS?**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Medium
- Priority Hazard

### Freeze and Snow

- Annual occurrences of winter weather
- The lowest recorded daily extreme was 16°F in 1972 in western Placer. In a typical year, minimum temperatures fall below 32°F on 22.6 days with 0 days falling below 0°F. Average snowfall on the western side of the County is 1.4 inches
- The lowest recorded daily extreme was -16°F in 1972 in eastern Placer. In a typical year, minimum temperatures fall below 32°F on 209 days with 0.4 days falling below 0°F. Average snowfall on the eastern side of the County is 190.7 inches.
- 913 severe winter weather and freeze events (NCDC) from 1993-2014
- 1 freeze and severe weather state Disaster Declaration, 1972
- **HMPC TO REVIEW RISK ASSESSMENT TO PROVIDE DETAILS ON MAJOR FREEZE AND SNOW EVENTS IN THE COUNTY. WHAT ABOUT BIG SNOW EVENTS IN THE EASTERN SIDE OF THE COUNTY SINCE 2016? HOW ABOUT THIS LAST WEEK?**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Medium
- Priority Hazard

### Heavy Rains and Storms (Hail, Lightning, Wind)

- Significant County history: annual occurrences; Severe storms/heavy rains are the primary cause of most major flooding.
- Average annual precipitation in western Placer County is 34.39 inches per year. The highest recorded annual precipitation is 64.87 inches in 1983; the highest recorded precipitation for a 24-hour period is 5.41 inches on October 13, 1962. The lowest recorded annual precipitation was 11.76 inches in 1976.
- Average annual precipitation in eastern Placer County is 31.46 inches per year. The highest recorded annual precipitation is 66.41 inches in 1996; the highest recorded precipitation for a 24-hour period is 7.0 inches on November 4, 1903. The lowest recorded annual precipitation was 9.34 inches in 1976.



- There have been 16 federal and 13 state declarations since 1950 for flooding, including heavy rains and storms. Since 2012, there have been 9 USDA declarations related to heavy rains.
- The NCDC data recorded 68 events for Placer County since 1950.
- **CAN THE HMPC PROVIDE DETAILS ON HEAVY RAIN AND STORM EVENTS, INCLUDING HAIL, LIGHTNING, AND WIND IN THE COUNTY SINCE 2013. PA SHEETS? OTHER?**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Medium
- Priority Hazard

### *Tree Mortality*

- Tree Mortality has been a significant issue in Placer County since the 2012-2016 tree mortality event in the central and southern Sierra Nevada counties.
- No state or federal disaster declarations for Tree Mortality since 1950. A state of emergency was declared in 2015. NCDC does not track tree mortality issues.
- **CAN THE COUNTY PROVIDE US WITH DATA AND PROBLEM AREAS, KEY ISSUES/CONCERNS RELATED TO TREE MORTALITY? INCLUDE BOTH PAST EVENTS, AREAS AFFECTED, AND MITIGATION UNDERTAKEN SINCE 2016.**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: High
- Priority Hazard

### *Wildfire*

- Wildfires occur on an annual basis in the Placer County Planning Area.
- Any ignition has the potential to become an out of control wildfire.
- Numerous named fires causing a variety of damages.
- 5 state and 6 federal disaster declarations for Wildfire since 1950.
- Cal Fire database lists numerous notable fires; 22 NCDC wildfire events since 1993.
- Significant wildfires since the 2016 LHMP include those where EOC was activated: Trail Head Fire (2016), North Fire, Sliger Fire, and Camp Fire (2018), Fork Fire (2020). **NEED SPECIFIC IMPACTS TO COUNTY AND JURISDICTIONS FROM THESE FIRES.**
- **OTHER SIGNIFICANT HISTORIC WILDFIRES AND PAST DAMAGES/ IMPACTS/ ISSUES SINCE 2016? INCLUDE THOSE BOTH OCCURRING INSIDE AND OUTSIDE THE COUNTY WHERE THE COUNTY WAS AFFECTED? 2020 NORTH COMPLEX FIRE?**
- **INCLUDE INFORMATION ON IMPACTS AND DAMAGES, AIR QUALITY AND SMOKE ISSUES? EVACUATION OR MUTUAL AID SUPPORT? OTHER?**
- Likelihood of Future Occurrence: Highly Likely
- Vulnerability: Extremely High
- Priority Hazard

## Data Needs

### *Review of Key Items to Date*

- Hazard-specific data
  - ✓ Hazard ID tables
  - ✓ Historic Hazard Worksheets or list of past hazard occurrences and impacts to each jurisdiction
    - Old participating jurisdictions – need past occurrences/hazard history since 2016
    - New participating jurisdictions –significant hazard occurrences - back 50 years or so
- Risk Assessment Worksheets (County)
- Data on future development areas (County/Cities)

### *Other Data Items*

#### General

- Logos for each participating jurisdiction
- Historic Hazard Data and Key areas affected by Jurisdiction (items identified in today's meeting)
- PA Summaries
- Photos, Photos, Photos
- Review of Updated Chapter 4 Risk Assessment and Jurisdictional Annexes